

Parks Canada Agency

Fish Habitat Offset

Big Island Wetland Channel Enhancement

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ATTACHMENTS

DRAWINGS	TITLE
DRAWING 0001	Project Area and Proposed Access Points
DRAWING 0002	North Channel – Plan and Cross Section

APPENDIX 1	Environmental Impact Assessment – Mitigation Measures – Big Island Marsh 31.03.2021
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END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 32 16 - Construction Progress Schedules - Bar (Gantt) Charts.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The implementation of fish habitat offset and channel enhancement at Big Island Wetland, Prince Edward County includes, without limitation, the following work:
 - .1 Dredging works (removing cattail mat, soft sediments and ground) to create or enhance two channels.
 - .2 Stockpile of dredged sediments in temporary area or direct transport off site. Contractor to confirm removal plan prior to the start of the work.
 - .3 Disposal of sediments off site.

1.3 CONTRACT METHOD

- .1 Construct Work under unit price contract.

1.4 WORK SEQUENCE

- .1 Co-ordinate Progress Schedule with Departmental Representative.
- .2 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .3 Maintain fire access/control.

1.5 CONTRACTOR USE OF PREMISES

- .1 Unrestricted use of site.
- .2 Limit use of premises for Work, for storage and for access, to allow Public usage.
- .3 Co-ordinate use of premises under direction of Departmental Representative.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING

- .1 Execute work with least possible interference or disturbance to occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.7 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and tenant operations.
- .3 Provide alternative routes for pedestrian and vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Departmental Representative.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.
- .11 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.

- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not used.

Part 3 EXECUTION

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative or Consultant.
- .2 Provide physical space and make arrangements for meetings.
- .3 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.
- .2 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Dredging method and description of work.
 - .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .8 Owner provided products.
 - .9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
 - .11 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .12 Appointment of inspection and testing agencies or firms.
 - .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 If needed, schedule meetings that will be held during the course of the work.
- .2 Departmental Representative, Consultant, Contractor, major Subcontractors and field inspectors will be in attendance.
- .3 Notify parties minimum 2 days prior to meetings.
- .4 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.

- .4 Problems which impede construction schedule.
- .5 Review of off-site fabrication delivery schedules.
- .6 Corrective measures and procedures to regain projected schedule.
- .7 Revision to construction schedule.
- .8 Progress schedule, during succeeding work period.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for affect on construction schedule and on completion date.
- .12 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative or Consultant to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 All work shall be completed no later than December 20th, 2021, when Substantial Performance Certificate to be delivered as defined times of completion.
- .2 In accordance with the Environmental Impact Assessment – Mitigation Measures, found at the end of this specification document, no in-water excavation in open water area is allowed after September 30 to protect over-wintering turtles. The North channel work will be between August 16 to September 30. South channel work will be after the North channel is completed, and if necessary, it may occur after September 30.
- .3 No excavation between March 15 and August 16 to protect marsh birds.
- .4 No in-water work permitted between March 15 and July 15 to protect spawning fish species.
- .5 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

- .6 Plan to complete Work in accordance with prescribed milestones and time frame.
- .7 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .8 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
 - .1 Mobilization, environmental measures, traffic control and temporary storage area.
 - .2 Dredging and transport of sediments.
 - .3 Interim Certificate (Substantial Completion) before December 20th, 2021.

1.5 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Include a detailed production analysis (for example: cubic meters excavated per day, cubic meters temporally stored, number of truckloads per day) in order for the Departmental Representative to get an accurate picture of the length of project and the different aspects impacting it.
- .3 Departmental Representative will review and return revised schedules within 5 working days.
- .4 Revise impractical schedule and resubmit within 5 working days.
- .5 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization, environmental measures, traffic control and temporary storage area.
 - .5 Dredging.
 - .6 Transport of sediments.

- .7 As-built survey.
- .8 Demobilization.

1.7 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not used.

Part 3 EXECUTION

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS, PRODUCT DATA AND METHODS OF CONSTRUCTION

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.
- .3 Indicate materials, methods of construction including equipment and machinery, and attachment or anchorage, explanatory notes and other information necessary for completion of Work. Indicate cross references to design drawings and specifications.
- .4 Allow 5 days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Method of construction.
 - .6 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 1 year of date of contract award for project.

- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's site office.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Frequency of photographic documentation: as directed by Departmental Representative.
 - .1 Upon completion of Work.

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of Ontario
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990, c.0.1, as amended and O. Reg. 213/91 as amended - Updated 2020.
- .3 Canada Shipping Act and Navigable Waters Protection Act

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 10 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
 - .4 Provide a Fire Safety Plan, specific to the work location.
 - .5 Contractor's and Sub-Contractor's Safety Communication Plan.
 - .6 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.
 - .7 COVID-19 Response and Mitigation Measures Plan.
- .3 Submit a copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative when requested
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Safety Data Sheets.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.

- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with the Acts and regulations of the Province of Ontario.
- .2 Comply with specified standards and regulations to ensure safe operation at site.
- .3 In event of conflict between any provisions of specified standards and regulations, the most stringent provision governs.

1.7 PROJECT/SITE CONDITIONS

- .1 Work on or around water, risk of drowning.

1.8 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Ontario having jurisdiction and advise Departmental Representative verbally and in writing.
- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Ontario having jurisdiction and advise Departmental Representative verbally and in writing.

1.12 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with dredging.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.13 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of the Province of Ontario having jurisdiction, and in consultation with Departmental Representative.

1.14 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.16 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.17 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 GENERAL

1.1 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Management Plan (EMP) for review and approval by Departmental Representative.
- .4 Environmental Management Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction. The EMP must include all measures to address all environmental provisions and mitigation as outlined in the Environmental Impact Assessment.
- .5 Address topics at level of detail commensurate all environmental provisions identified in the mitigation measures listed in the appendix of this specification.
- .6 Include in Environmental Management Plan:
 - .1 Names of persons responsible for ensuring adherence to EMP.
 - .2 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
 - .3 Drawings indicating locations of proposed temporary embankments for material storage areas, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
 - .4 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .6 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

- .7 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .8 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .9 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .10 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .11 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .12 Biological resources and wetlands plan that defines procedures for identifying and protecting biological resources and wetlands.

1.3 FIRES

- .1 Fires and burning of rubbish on site are prohibited.

1.4 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3 Waste materials shall be recycled if possible, and if not, the site of disposal shall be approved.
- .4 If necessary, Contractor shall submit a copy of official authorization and permits prior to seek Departmental Representative's authorization to remove waste materials from work site.

1.5 DRAINAGE

- .1 Develop and submit Erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
- .3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

1.6 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and, when necessary, encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Avoid stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas designated by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Waterways to be kept free of excavated fill, waste material and debris.
- .2 Do not use banks or waterway beds material for borrow.
- .3 Cleaning of equipment in the water is prohibited.
- .4 Service and refuel vehicles at least 30 m from bank.
- .5 Do not store petroleum products or any other hazardous materials less than 30 m from bank.
- .6 If for some reason certain equipment or hazardous products, implying hazardous material handling, should take place within 30 m from waterways, Contractor shall submit a contingency plan to the Departmental Representative and get it approved prior to beginning of work. The plan will provide, without being limited to, details as follows:
 - .1 Designated inner limits of work area for the use of operations.
 - .2 Handled or stored hazardous products (ex. diesel, waste oils, etc.).
 - .3 Containment methods used in order to limit contamination during maintenance and refuelling of equipment and vehicles (in case of oil leakage).
 - .4 The presence of emergency equipment in case of spill near supplying zone and maintenance area.
 - .5 The procedure for hazardous spill.
 - .6 A list of contacts in case of hazardous spill.
 - .7 If generators must be used, make sure that the fuel tank of each generator is equipped with double walls and that it is installed on an impermeable floor with raised kerb to avoid any discharge.
 - .8 In the event of soil contamination as a result of project-related activities, the site shall be restored to comply with its intended use, and the contaminated soil shall be disposed of at an authorized site.

1.8 INVASIVE ALIEN SPECIES

- .1 In order to avoid the introduction of invasive alien marine species in natural ecosystem, the following measures shall be taken:

- .2 For marine equipment cleaned and stored overland, before commencement of Work, contractor shall provide in writing to the Departmental Representative:
 - .1 Floating equipment list.
 - .2 Storage site.
 - .3 Target date of launching.
 - .4 Departmental representative shall be able to verify if the equipment is clean and stored overland before commencement of Work.
- .3 For equipment already in the water and before its mobilization, Contractor shall demonstrate at his own expense that the floating equipment is free of invasive alien marine species. Just before mobilization, Contractor shall present an inspection report certifying that the equipment is free of invasive alien marine species.
 - .1 Report shall be produced by qualified biologist in the identification of benthic fauna.
 - .2 Sampling shall be realized by divers.
 - .3 Prior to site mobilization, Report submitted to Departmental Representative shall contain pictures and to be signed by a biologist before submitted to Departmental Representative. Report shall include, but is not limited to:
 - .1 The waterbody in which vessels were last used.
 - .2 The list of the inspected equipment.
 - .3 Date and inspection site.
 - .4 Summary of the protocol sampling and identification.
 - .5 Samples listing.
 - .6 Results.
 - .7 Certificate concerning the presence or the absence of species.
- .4 If the inspection report confirms the presence of invasive alien species, Contractor shall replace equipment or proceed at his own expense to the complete cleaning of the equipment. The description of the cleaning works carried out shall be included in a new inspection report to certify the absence of invasive alien species.
- .5 Departmental Representative reserves the right to conduct a counter-expertise inspection at his own expense at any time. If the presence of alien invasive species is observed, Contractor shall stop the Works and clean at his own expense the equipment referred and produce a new report.

1.9 PROTECTION OF THE AQUATIC ENVIRONMENT IN THE WORK AREA

- .1 The work area should be clearly defined.
- .2 Ensure workers are informed of environmental and safety measures.
- .3 Do not store material or debris on bank.
- .4 A sediment control device shall be installed during dredging.
- .5 For underwater works required, the Contractor must assure that all equipment pieces involved are free of contamination and of any oil leakage.
- .6 Land-based equipment storage shall be made above the high-water level and as conditions described in section – Work adjacent to waterways.

- .7 Employ a method for removing dredge material that involves minimal contact between the sediments and machinery to avoid creating suspended matter.
- .8 Keep navigation near the area to a minimum in order to minimize the ripple effect caused by passing boats on the sediment.
- .9 When weather conditions deteriorate, work must be avoided to prevent the dispersion of material resuspended by the work.

1.10 EROSION AND SUSPENDED SOLIDS (SS) CONTROL

- .1 Contractor to plan work as to protect the shorelines of water bodies against erosion and gulying and minimize sediment transport towards open water or any other watercourse. Temporary accesses developed on the shorelines shall also be stabilized if they result in the introduction of sediments in water bodies.
- .2 Contractor to provide Water Quality Monitoring Program to be applied throughout the duration of work as to quantify SS concentrations produced by his work in comparison with ambient conditions:
 - .1 Do not discharge or generate pumped, drainage water, or water from any other source or activity, with causing an increase of suspended sediment concentrations of more than 8 NTU over background levels during any short-term exposure period (e.g., 24-h). For longer term exposure (> 24 h), average suspended sediment concentrations shall not be increased by more than 2 NTU over background levels.
 - .2 Contractor to present a work method which proves that every attempt has been done so that Work does not generate concentrations of suspended solids which exceed the criteria:
 - .1 To the extent possible, comply with maximum suspended solid concentration, which is an increase of SS concentrations of more than 8 NTU over background levels during any short-term exposure period (e.g., 24-h). For longer term exposure (> 24 h), average SS concentrations shall not be increased by more than 2 NTU over background levels. If an increase greater than the criteria, the Departmental Representative shall convene a site meeting with the Contractor to discuss required measures to be taken to quickly rectify the situation;
 - .2 Contractor is responsible for the characterization of the river's ambient concentrations of SS for comparison with concentrations measured during Work via four measurements per day during work and upon request by the Departmental Representative when deemed necessary;
 - .3 Contractor's work method to provide adequate accuracy, otherwise the Departmental Representative can demand the modification of the procedure and/or cessation of work time to ensure SS concentration decreases and stays under the allowable criterion;
 - .4 Contractor to be responsible for, but not limited to, providing all equipment, specialized workforce, transport, calibration, data analysis, reports, monitoring, maintenance, inspections and signage associated with the procedure implemented for the monitoring of SS discharge levels into the environment.
 - .3 Departmental Representative reserves the right to stop Work if discharged SS concentrations exceed criteria indicated in this specification or if doubts remain regarding the Contractor's work method or its implementation.

- .3 Arrange proper dewatering area to capture dripping water from dredge material to prevent water with high SS concentration to discharge in water bodies. All material excavated in water must be drained and managed as soil according to applying regulation. The harnessing and the management of draining waters is the Contractor's responsibility and requires adapted equipment and methods.
- .4 During work, if an increase of suspended solids is noted, install a device to reduce the distribution of suspended solids.
- .5 Proceed to routine inspection of work areas to detect signs of erosion and fine particles transportation towards water bodies; implement appropriate mitigation measures at once.
- .6 Unless otherwise indicated by Departmental Representative, remove temporary erosion and sediment transport control devices once work is completed.

1.11 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent fine materials and other extraneous materials from contaminating air and water beyond work site.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .5 Control dust on temporary roads.
- .6 Use machinery in good operating condition to avoid grease, oil or fuel leaks. Submerged equipment parts shall be clean and free of leaks.
- .7 Perform service and verifications on all machineries (excavator, crane) by a qualified mechanic before arrival at site. Ensure there are no fuel, oil or grease leaks, and silencer must be in good condition. Repair non-compliant equipment as rapidly as possible (noise or leaks).
- .8 Immediately recover any contaminant spill in the environment and dispose of it in accordance with applicable legislation.
- .9 Maintain absorbent materials on site at all times for rapid intervention in case of hazardous spill. Know how to use emergency equipment in case of accidental spill.
- .10 Report any hydrocarbon spill or other environmental incident to Departmental Representative and authorities having jurisdiction. Recover hydrocarbons and contaminated soil and dispose of in conformance with applicable legislation.
- .11 Keep on site suitable emergency equipment in case of an accidental spill and ensure the appropriate use of it.
- .12 Keep on site, near the work area and near the supplying zone established, an emergency spill response kit. The emergency spill response kit shall contain absorbent material in adequate quantities to remove petroleum from site.

- .13 In the event of a hydrocarbons spill or other hazardous material, the Contractor must advise Departmental Representative and authorities having jurisdiction mentioned in the emergency plan. Report immediately the situation to Ontario Spill Action Centre at (1-800-268-6060) and Environment Canada Emergency services (1-866-283-2333).
- .14 Wasted oils and other contaminated wastes shall be managed in compliance with effective regulation. This included storage at site, transportation and elimination.
- .15 Do not dispose of volatile materials such as mineral oils and oil or paint thinner in rivers, stormwater or sewers.

1.12 TRANSPORT OF MATERIALS

- .1 Ensure trucks are not leaking muddy water (proper dewatering) and keep roads clean.
- .2 Ensure proper operation of trucks used. Any trucks or other means of transport creating sound levels that Departmental Representative deems to exceed standards shall cease transporting materials or be repaired or modified to be made acceptable.
- .3 Contractor shall use adequate signalization and co-operate with municipality.
- .4 Coordinate with Departmental Representative and other authorities having jurisdiction to minimize the impact of transportation on the daily lives of residents in area adjacent to truck route and construction site.
- .5 Use a sheet to cover material during transportation.
- .6 Limit traffic for the transportation of material to roads and areas identified in the specifications.

1.13 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Management Plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative
 - .1 Take action only after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.
- .5 Maintain the roads used in good condition at all times and take the necessary measures to ensure they can be safely used and crossed by other users.
- .6 Upon work completion, promptly restore the roads to a condition that is at least equal to their original state.

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not Used.

Part 3 EXECUTION

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep roads clean.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

- .1 This Section describes requirements for protection of archaeological and cultural resources that apply to the Work. These requirements apply to all Sections of this Specification, without limiting the conditions and approvals imposed by statute.
- .2 Control Work to provide effective archaeological and cultural protection. Departmental Representative will monitor mitigation measures and will identify whenever such measures are found to be ineffective.
- .3 Comply with environmental requirements of Contract Documents, applicable federal, provincial, and local statutes, acts, regulations, and ordinances of Agencies having jurisdiction.

1.2 DEFINITION

- .1 Cultural Resource: any heritage or archeological artifacts, relics or antiquities including but not limited to:
 - .1 Corner stones and their contents.
 - .2 Buried artifacts including tools, stacked stones, dressed lumber, rough sawn lumber, round timbers, timber piles (round or squared off).
 - .3 Remains and evidence of ancient persons and peoples including arrowheads, pottery, implements, shelters, clothing, etc.

1.3 HISTORICAL, ARCHEOLOGICAL CONTROL

- .1 Should any archeological or cultural resource be discovered during excavation or demolitions works, stop work immediately. Contact the Departmental Representative for direction prior to continuing work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.3 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.4 CONSTRUCTION PARKING

- .1 There will be no parking for contractor employees on Road 21. Arrange and pay for temporary parking on adjacent roads, in order to minimize traffic impacts.
- .2 Provide and maintain adequate access to project site.

1.5 LAND ACCESS

- .1 Provide and maintain adequate access to and exit from project site.
- .2 Provide snow removal for temporary access throughout period of work.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.
- .4 Repair damage to existing land, roads, vegetation or structures resulting from Contractor's equipment and operations. Restore to original condition at no additional cost to Departmental Representative.
- .5 Contractor to restrict activities within areas approved.
- .6 Access to Construction Areas other than indicated, requires approval of Departmental Representative and Owners. Immediately upon award of contract Contractor will submit for

approval details of proposed access routes, parking area, office location, dewatering area, temporary storage area, other temporary facilities and works other than indicated. No claim will be entertained arising out of delay in such approval being obtained or if approval is not given.

1.6 WATER ACCESS TO DREDGE SITE

- .1 Contractor must validate all access to dredge sites.
- .2 Only one water access point at the same time to minimize length of road closure.

1.7 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays if needed.

1.8 OFFICES

- .1 No offices or accommodations are required for the Contractor, Departmental Representative or Consultant.

1.9 EQUIPMENT, TOOL AND STORAGE SHED

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.11 SITE ENCLOSURES

- .1 Erect temporary site enclosures if needed.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic in accordance with Section 01 55 26 – Traffic Control.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Maintain adequate dust control to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads are subject to approval by Departmental Representative.
- .12 Lighting: provide as necessary to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by Departmental Representative.

1.13 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or gravel-surfaced roadways.
- .3 Store materials properly.

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not Used.

Part 3 EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent water bodies, properties and walkways, according to requirements of authorities having jurisdiction.

- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: separate waste materials for recycling if needed.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 Ministry of Transportation, Ontario (MTO)
- .2 Ontario Traffic Manual, Book 7: Temporary Conditions

1.2 PROTECTION OF PUBLIC TRAFFIC

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .3 Close lanes of road only after receipt of written approval from Departmental Representative.
 - .1 Before re-routing traffic erect suitable signs and devices to Ontario Traffic Manual, Book 7: Temporary Conditions.
- .4 Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.
 - .1 Provide 7 m wide minimum temporary roadway for traffic in two-way sections through Work and on detours.
 - .2 Provide 5 m wide minimum temporary roadway for traffic in one-way sections through Work and on detours.
- .5 Provide detours as indicated, to facilitate passage of traffic around restricted construction area.
- .6 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist that meet approval of Departmental Representative.

1.3 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices to Ontario Traffic Manual, Book 7: Temporary Conditions.
- .3 Place signs and other devices in locations recommended in Ontario Traffic Manual, Book 7: Temporary Conditions.

- .4 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .5 Continually maintain traffic control devices in use:
 - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Remove or cover signs which do not apply to conditions existing from day to day.

1.4 CONTROL OF PUBLIC TRAFFIC

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to Ontario Traffic Manual, Book 7: Temporary Conditions for situations as follows:
 - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
 - .3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .4 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .5 For emergency protection when other traffic control devices are not readily available.
 - .6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .7 At each end of restricted sections where pilot cars are required.
 - .8 Delays to public traffic due to contractor's operators: 15 minutes maximum.
- .2 Provide pilot cars if necessary. Equip pilot cars with orange flashing lights and signs clearly designating vehicles as pilot cars.
- .3 Where roadway, carrying two-way traffic, is restricted to one lane, for 24 hours each day, provide portable traffic signal system.
 - .1 Adjust, as necessary, and regularly maintain system during period of restriction.
 - .2 Ensure signal system meets requirements of Ontario Traffic Manual, Book 7: Temporary Conditions.

1.5 OPERATIONAL REQUIREMENTS

- .1 Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified and approved by Departmental Representative to protect and control public traffic.
- .2 Maintain and protect traffic on Road 21 during construction period. Road 21 cannot be completely closed.
- .3 Minimize length of road closure by maintaining only one water access point at the same time.

- .4 Contractor must submit for approval by Departmental Representative a detail traffic control plan with all permits, approvals and traffic control measures in place.

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 32 16 – Construction Progress Schedules - Bar (Gantt) Charts.

1.2 REFERENCES

- .1 Owner's identification of existing survey control points and property limits.

1.3 SURVEY REFERENCE POINTS

- .1 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .2 No elevations are provided. Typical cross-sections on plan are approximate and can vary.
- .3 The position of channels must be accurate to plan (Z and Y).
- .4 The depth (Z) of excavation will be based on typical cross-sections on plan and on water level.
- .5 Drawings are based on a drone survey and a few surveys measured with a rule on a boat.
- .6 Make no changes or relocations without prior written notice to Departmental Representative.
- .7 Report to Departmental Representative when reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
- .8 Require surveyor to replace control points in accordance with original survey control.

1.4 SURVEY REQUIREMENTS

- .1 Establish two permanent benchmarks on site, referenced to established benchmarks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Mark site prior to Works.
- .4 The Contractor shall take on the entire responsibility for the marking out of the work and the complete execution in accordance with the location, the lines and the levels indicated.
- .5 Provide the necessary material for the marking out and the implantation.
- .6 Provide the required material such as rules and gauges to ease the work of the Departmental Representative concerning the inspection of the works.

1.5 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.
- .2 Remove abandoned service lines. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

1.6 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.7 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

1.8 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.9 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 43 – Environmental procedures.
- .2 Section 01 50 13 - Temporary Facilities and Controls for Dredging.
- .3 Section 01 77 00 - Closeout Procedures.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Keep work site access road free of ice and snow. Place snow only at indicated areas or evacuate out of work site as indicated.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Dispose of waste materials and debris off site.
- .7 Store volatile waste in covered metal containers and remove from premises at end of each working day.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Sweep and wash clean paved areas.
- 1.4 **WASTE MANAGEMENT AND DISPOSAL**
 - .1 Separate waste materials for recycling if needed.

Part 2 PRODUCTS

- 2.1 **NOT USED**
 - .1 Not Used.

Part 3 EXECUTION

- 3.1 **NOT USED**
 - .1 .Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 78 00 – Closeout Submittals.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative and Contractor.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Final Payment:
 - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
 - .7 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review installation instructions.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, an as-built plan.

1.3 FORMAT

- .1 Provide 1:1 scaled CAD files in dwg and PDF format on electronic media acceptable to the Departmental Representative.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of red line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .2 Measured locations of internal utilities and appurtenances referenced to visible and accessible features of construction.
 - .3 Field changes of dimension and detail.
 - .4 Changes made by change orders.
 - .5 Details not on original Contract Drawings.
 - .6 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.

- .6 Other Documents: maintain inspection certifications, field test records required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.7 FINAL SURVEY

- .1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Only material excavated above grade plane and within side slopes indicated or specified will be measured.
 - .2 Dredging and disposal of dredge off site: will be measured in Cubic Metres including all machinery, equipment and labor.
 - .3 Measurement: prior to the start of the work, the Contractor and Departmental Representative must come to a mutual agreement on how the quantity and volume of material removed will be measured (examples could include by the truck load or as surveyed - either on site or at the disposal site).
 - .4 Operations in connection with field positioning of dredging equipment will not be measured separately for payment.
 - .5 No separate payment will be made for Contractor's survey vessel, equipment and crew or diving services.
 - .6 No additional payment for delays incurred during periods when no dredging is permitted.
 - .7 No additional payment for downtime and for delays caused by vessel traffic.
 - .8 Removal of infilling material will not be measured for payment.
 - .9 Mobilization and demobilization of dredging equipment to be lump sum.
 - .10 No separate payment will be made for sweeping.

1.2 REFERENCES

- .1 Definitions:
 - .1 Dredging: excavating, transporting and disposing of underwater materials.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Navigation co-ordination:
 - .1 Be familiar with vessel movements and fishery activities in area affected by dredging operations. Plan and execute Work in manner that will not interfere with fishing operations, marina operations, construction activities at wharf sites, or access to wharves by land or water.
 - .2 Departmental Representative will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in harbour or due to other Contractor's operations.
 - .3 Keep District Manager, Canadian Coast Guard, Fisheries and Oceans, informed of dredging operations in order that necessary Notices to Mariners will be issued.
- .2 Scheduling:
 - .1 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing dredging operations or mobilizing other equipment. Notify Departmental Representative of corrective action to be taken.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Brief description of methods of construction including equipment and machinery, dredge material on water and inland transportation, temporary storage, dewatering and sediment control.

1.5 QUALITY ASSURANCE

- .1 Regulatory agency sustainability approvals:
 - .1 Comply with municipal, provincial and national codes and regulations relating to project.
 - .2 Mark floating equipment with lights in accordance with Regulations for the Prevention of Collisions and Rules of the Road for the Great Lakes.
- .2 Floating plant:
 - .1 The Contractor shall supply and maintain all dredging equipment with sufficient capacity to excavate, load, transport and dispose of all materials mentioned in the specification, taking into account settling of materials and excess dredged materials as applicable. All equipment used to execute the dredging contract shall be at all times satisfactory to the Departmental Representative.
 - .2 If while the work is being carried out, the equipment provided is not, in the opinion of the Departmental Representative, suitable and sufficient for performing the work properly, the Contractor shall, within 15 days following receipt of written notice from the Departmental Representative, provide other equipment subject to prior approval by the Departmental Representative.

1.6 SITE CONDITIONS

- .1 Contractor to visit and inspect work site and become thoroughly familiar with extent and nature of Work and conditions affecting Work before tendering.
- .2 Results of prior soundings are on drawings. It should be noted that this information may differ from site condition and is given as general information only. Take this into consideration when submitting tender.
- .3 Take necessary steps to become fully familiar with potential inclement weather and water conditions in this area.
- .4 Survey requirements:
 - .1 Provide, at own expense, survey vessel, equipment (DGPS, pole, etc.) and crew to set up and maintain control for location of dredge limits and depth of channel areas immediately after dredging to verify that grade depth has been attained.

1.7 MATERIAL TO BE DREDGED

- .1 The material to be dredged is composed of cattails, soft sediments and solid sediments as shown on drawing. The quantities shown on the tender form are approximate.
- .2 No boulders or rocks should be removed. Natural features such as logs and wood should also remain in place and only be removed if they obstruct barge movement or operations.

Part 2 Products

2.1 DREDGING EQUIPMENT

- .1 Contractor to determine required equipment necessary to dredge material specified and to dispose of dredged material partly on site and off site. Mechanical dredging is suggested.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of location:
 - .1 Work comprises dredging of areas as indicated on drawing.
- .2 Surveys and acceptance of work:
 - .1 Post-dredge survey will be undertaken by Contractor upon completion of dredging. Survey will confirm if dredging is completed as specified and whether area can be considered cleared area. Survey will be by DGPS on an adapted pole. Survey plan at 1:500 plotting least of minimum depths obtained in this survey will identify areas requiring reworking to obtain following elevations.
 - .2 Contractor to redredge as necessary to remove all material within dredge areas which is found to be above grade.

3.2 DREDGING

- .1 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.
- .2 Place and maintain markers required to define work and disposal areas.
- .3 Lay out Work from base lines established by Departmental Representative. Be responsible for accuracy of Work relative to established baseline. Provide and maintain electronic position fixing and distance measuring equipment, laser transits and such other equipment as normally required for accurate dredging control.
- .4 Areas to be dredged are to be referenced to vertical baseline for each location of dredging as indicated.
- .5 Establish and maintain water level gauges in order that proper depth of dredging can be determined. Locate gauges so as to be clearly visible.
- .6 Establish and maintain on-land targets for location and definition of designated dredge area limits. Targets to be suitable for control of dredging operations and locating soundings. Remove targets on completion of Work.
- .7 Dredge channels to grade depth shown on drawing. Do not over excavate. Dredging not to exceed 3 metres depth.
- .8 Dredge side slopes to one horizontal to one vertical.
- .9 Remove materials above specified grade depths, within limits indicated. Material removed from below subgrade depth or outside specified area or side slope is not part of Work.
- .10 Remove shoaling which occurs as result of Work at no expense to Departmental Representative.

- .11 Remove material cast-over on surrounding area and dispose of it as dredged material. Do not cast-over material unless authorized by Departmental Representative.
- .12 Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative.
- .13 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work.
- .14 Dredge material (cattail only) can be placed at a 5 meters distance from channel in windrows. The windrows maximum length is 10 meters and maximum high above water level is 1 meter. This will be done for approximately 10% of the dredge material until there is no space available for windrows in agreement with Departmental Representative.
- .15 Dredge material for off site disposal must be temporarily stored to allow dewatering of material before transportation on main roads accordingly to Section 01 35 43 - Environmental Procedures.

3.3 SOLID ROCK REMOVAL

- .1 No solid rock or boulders need to be removed. If solid rock is present at dredging depth, it will remain in place and the depth will be adjusted accordingly.
- .2 If boulders are excavated, they can be relocated on site with Departmental Representative approval.

3.4 SITE QUALITY CONTROL

- .1 Site test and inspections:
 - .1 Co-operate with Departmental Representative on inspection of Work and provide assistance requested.
 - .2 Upon request of Departmental Representative, furnish use of such boats, equipment, labour and materials forming ordinary and usual part of dredging plant as may be reasonably necessary to inspect and supervise Work. Volume of material transported in partially filled scows will be determined by Departmental Representative.
- .2 Non-conforming work:
 - .1 If, as result of incomplete Work, additional verification of depths by sounding or sweeping becomes necessary, additional costs involved shall be paid by Contractor.
 - .2 Re-dredge unsatisfactory Work and verify depths with additional sounding or sweeping to approval of Departmental Representative.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for recycling if needed.

END OF SECTION

Drawings

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3
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LEGEND:



PROPOSED ACCESS POINT

Notes:

- 1 - Contractor must identify the access points, temporary storage area and other temporary facilities to be used and obtain approvals of Departmental Representatives as well as local landowners, all according to specifications.
- 2 - Contractor must maintain and protect the traffic on Route 21 during the construction period. Contractor must submit for approval by Departmental Representatives a detailed traffic control plan with all permits, approvals and traffic control measures in place.

NOTES :

- 1-Reference:
- ORTHOPHOTO, Aerial Photograph, 2020.
 - MINISTRY OF NATURAL RESOURCES AND FORESTRY @ Queen's Printer for Ontario, 2015 Aerial Photograph (2020).

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Client

Parks Canada Agency


Project

DFO Fish Habitat Offsetting Project

Big Island Wetland Channel, Prince Edward County, Ontario

Title

Project Area and Proposed Access Points



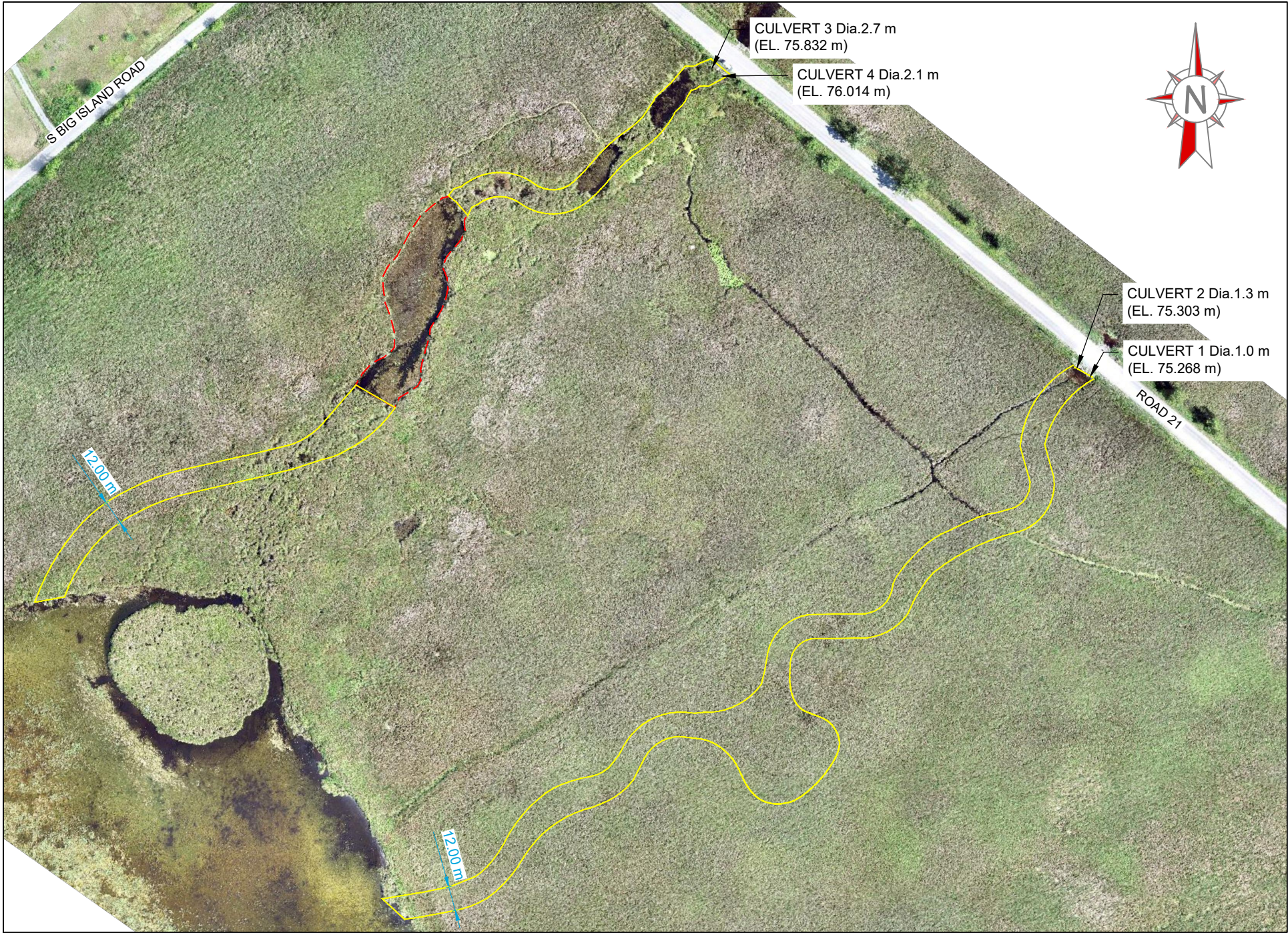
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Discipline: Environmental		Prepared by: K.Jacobs	Verified by: M.Gendreau
Scale: 1:2500		Drawn by: E.Ciochon	Approved by: K.Hunter
Date: 2021-03-18		Figure n°: 0001	
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Paper Format: ANSI full bleed B (17.00 x 11.00 Inches)			

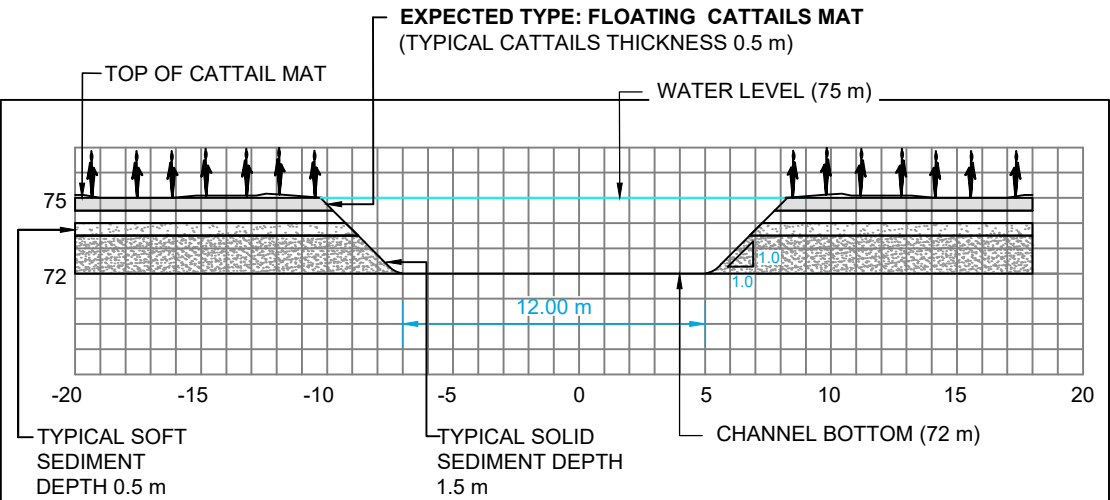
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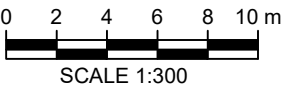
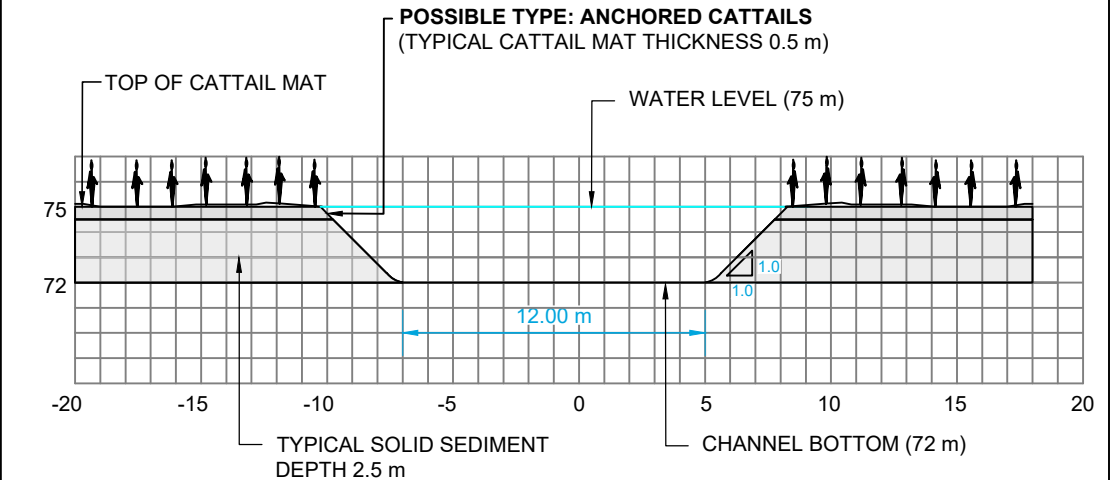
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PROPOSED CHANNELS



SUMMER WATER LEVELS AND CONDITIONS
OF THE DAY RECORDED ON AUGUST 11, 2020
WATER LEVEL: 75.00 m



LEGEND:



PROPOSED CHANNEL



AREA TO BE VERIFIED AND
CLEANED/EXCAVATED IF TOO SHALLOW

NOTES :

- 1-Reference:
- ORTHOPHOTO, Aerial Photograph, 2020.
 - MINISTRY OF NATURAL RESOURCES AND FORESTRY @ Queen's Printer for Ontario, 2015 Aerial Photograph (2020).
- 2-The survey is approximate. Site conditions can vary.

Reference Points (NAD83, MTM ZONE 9)

ID	Latitude	Longitude	Elevation
Culvert 1	246609.216	4885412.587	75.268
Culvert 2	246607.960	4885413.630	75.303
Culvert 3	246429.663	4885562.807	75.832
Culvert 4	246444.391	4885574.044	76.014



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Client

Parks Canada Agency

Project

DFO Fish Habitat Offsetting Project

Big Island Wetland Channel, Prince Edward County, Ontario

Title

North Channel
Plan and Cross Section



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Discipline: Environmental	Prepared by: K.Jacobs	Verified by: M.Gendreau
Scale: 1:2500	Drawn by: E.Ciochon	Approved by: K.Hunter
Date: 2021-03-18	Figure n°: 0002	
Page setup: DWG002	Paper Format: ANSI full bleed B (17.00 x 11.00 Inches)	Register n°:

Resp.	Project	Wbs	Project/ Disc	Phase/ Type	Elec. ref. / Drawing n°	Rev.
128	P-0021138	0-01-202	HG	1		0002 00

**Appendix 1 Environmental Impact Assessment
– Mitigation Measures
– Big Island Marsh
31.03.2021**

Fish Habitat Offset - Big Island Marsh Channel Enhancement

1. MITIGATION MEASURES

The primary project mitigation, to negate adverse effects on wildlife, is adhere to environmental timing recommendations outlined in the project specification.

Most species will avoid the impact area when active disturbances are taking place. Therefore, the implementation of dredging and excavating needs to be timed so as to minimize loss of species that are unable to avoid the impact area, such as spawning fish and hibernating turtles. The lowest risk period to avoid spawning fish and hibernating turtles is suggested to occur between early August and late September. Using this guide, the soundest environmental period for the work is from mid-August to end September.

Species at Risk: Reptiles, Birds and Amphibians

1. No in water excavation after September 30 to protect over-wintering turtles.
2. If necessary, the south channel excavation – the portion that is out of water - may occur after September 30 but must be completed prior to March 15.
3. No excavation before August 16 to protect avian marsh inhabitants.
4. Watch out for wildlife while driving along roads; drive at reduced speed.
5. Park on roads or disturbed areas only.
6. All access points that need to be established for the project will be approved by Parks Canada.
7. Construction access and work areas are to be confined to the minimum area required for construction activities and such areas are to be defined in the field using appropriately installed protective fencing or other suitable barriers. Minimize the disturbed area; clearly mark the work space.
8. Prior to beginning work, check for wildlife by conducting a thorough visual inspection of the work space and immediate surroundings.
9. Pre-construction activities can contribute to pre-stressing - actions may be taken to encourage wildlife to move away from a site prior to the onset of construction.
10. All sites will be inspected by a biologist to identify any potential wildlife or SAR issues and to inform or adjust mitigation planning as needed.
11. Species at Risk awareness training shall be provided to all employees before they begin work on site (materials can be part of the Environmental Protection Plan). Employees must be able to identify potential species at risk and know the proper procedures to follow when they encounter a species at risk.
12. Should any snakes, turtles and/or eggs be encountered during construction - project staging, de-watering, implementation - work shall halt immediately and Parks Environmental Assessment (EA) Staff would be notified. Stop work immediately and contact EA staff at 705-761-1634 for guidelines on how to proceed. Additional

measures to avoid impacts may be required before work can restart. If applicable, stand back and allow the animal to leave the site.

13. When SAR amphibians and reptiles are found on a construction site, proper handling, translocation and reporting protocols will be followed. Specific protocols for SAR encounters are available in the Ontario Species at Risk Handling Manual.
14. Project-specific reporting and handling protocols should be developed in coordination with the appropriate agency personnel. Observation records should include the observer's name, date and time, species, location (descriptive and geo-referenced), photographs, and action taken.

Fish & Fish Habitat/Water Quality

15. No in-water work permitted before July 15 to protect spawning fish species.
16. Ensure sediment and erosion control measures and other protective measures are in place prior to beginning work. Inspect them regularly, and particularly after storm events, to ensure their continued effectiveness.
17. All sediment and erosion control measures shall be inspected daily to ensure they are functioning properly and are maintained and/or upgraded as required to prevent entry of sediment into the water.
18. If sediment and erosion control measures are not functioning properly, no further work shall occur until the sediment and/or erosion problem is addressed.
19. CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life - Total Particulate Matter - will form the baseline for water and streambed quality.
20. A maximum increase of suspended sediment concentrations of 8 NTU over background levels during any short-term exposure period (e.g., 24-h). For longer term exposure (> 24 h), average suspended sediment concentrations shall not be increased by more than 2 NTU over background levels.
21. In case of a sediment release from land into the water, Parks Canada shall be notified. Mitigation and/or remediation measures will be required.
22. Only the working part of a machine is to enter the water; any part of a machine or equipment entering the water shall be free of fluid leaks and externally degreased to prevent any deleterious substance from entering the water. Complete the in-water activity as quickly as possible to minimize the time equipment is in the water; do not leave equipment in water during breaks in work activity.
23. Should conditions at the work site indicate that there are unforeseen create negative impacts to fish or their habitat, all work shall cease until the problem has been corrected and Parks Canada EA consulted.
24. If rock is used to establish/stabilize access areas, it shall be clean, free of fine materials.
25. Any stockpiled materials shall be stabilized at a distance to prevent re-entry into the water.

26. All disturbed areas of the work site shall be stabilized immediately with erosion protection. All exposed areas should be covered with erosion control blankets or other measures such as mulch to keep the soil in place and prevent erosion until vegetated in the spring.
27. Avoid activity during excessively wet weather conditions; monitor forecasts for heavy rainfall watches & warnings.
28. In order to mitigate against introducing invasive species to the sites, follow the *Ontario Clean Equipment Protocol for Industry - Inspecting and cleaning equipment for the purposes of invasive species prevention*.
29. To reduce the risk of introducing invasive species, all equipment must be thoroughly cleaned prior to coming to the site. Any machinery that appears to have not been cleaned will not be permitted on site. For additional information or guidance on how to properly clean equipment, see the Clean Equipment Protocol for Industry developed by the Ontario Invasive Plant Council and found here: http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf.
30. Any equipment, vehicles or barges which are to be used in water, should be thoroughly cleaned before and after use of any visible mud, vegetation, mussels, etc.:
 - Vessels/equipment should be drained of standing water;
 - Vessels/equipment should ideally be cleaned with hot water (>50 °C) at high pressure water (>250 psi);
 - Vessels/equipment should be dried for 2 – 7 days in sunlight before transported between waterbodies;
 - Cleaning of vessels/equipment should be conducted away from waterbodies at a recommended distance of at least 30m from the shoreline.

General Project Mitigation

31. Inform the Parks Canada Environmental Officer, Trent-Severn Waterway in Peterborough, regarding any changes to project plans and/or scheduling.
32. For the portion of the access by public roads, make all arrangements, obtain any required permits and confine activities to such routes and load limits as the authorities having jurisdiction may require.
33. Secure the work area and equipment in an approved manner and prevent public access to any areas where construction activities occur and construction material is stored.
34. Parks Canada's Environmental Authority (EA), Trent-Severn Waterway will outline prescribed mitigation measures in a construction start-up meeting with the project manager and the contractor, to ensure that all on-site personnel are aware of these mitigation measures.
35. Ensure that all on-site personnel are aware of, and comply with mitigation measures.

36. Keep worksite clean; daily garbage (inc. cigarette butts) removal.
37. Maintain equipment to avoid leakage of fuels and liquids. Ensure measures are in place to minimize impacts of accidental spills; an emergency spill kit shall be kept on-site and employed immediately should a spill occur.
38. In case of a spill, the Ontario Spill Action Centre shall be notified immediately at 1-800-268-6060 and Parks Canada shall also be notified. Should a spill occur, further mitigation and/or remediation measures may be required.
39. In the event of a spill, remediation will be conducted immediately contain and clean up in accordance with regulatory requirements and to the satisfaction of Parks Canada. Documentation of remediation, testing and results will be provided to Parks Canada.
40. Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads.
41. Refuelling of equipment and maintenance shall be conducted away from water bodies on impermeable pads to allow full containment of spills at a recommended distance of 30 meters from any watercourse.
42. Drip trays shall be placed under fuel-powered equipment.
43. There shall be no discharge of chemicals and cleaning agents in or near aquatic habitats, all such substances shall be disposed of at a facility licensed to receive them.
44. All materials and equipment used shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum productions, debris etc.) from entering the water.
45. No tools, equipment, temporary structures or parts thereof, used or maintained for the purpose of this project, shall be permitted to remain at the site after completion of the project.
46. Restore the access and work areas to the original condition upon completion of the work as approved by Parks Canada.
47. Should any suspected cultural artifact or unrecorded archaeological resources (i.e. structural remains and/or artifact concentrations) be uncovered/discovered, work shall cease until the item can be reviewed by a Parks Canada or Parks Canada-appointed archaeologist, the situation reviewed and direction for mitigation measures is provided to the EA Officer and Project Manager. Ensure that all exposed underwater cultural materials are kept submerged and/or wet while waiting for direction.
48. All on-site vehicles are expected to have a Drive Clean Emissions Report in compliance with O. Reg. 361/98: Motor Vehicles under the Environmental Protection Act, R.S.O. 1990, c. E.19. EA Officers may stop a vehicle if they believe the vehicle is emitting excessive exhaust smoke or suspect that emission control equipment has been tampered with or removed.

49. Use well-maintained heavy equipment and machinery, preferably fitted with fully functional emission control systems/muffler/exhaust baffles, engine covers, etc.; machines shall not be left to unnecessarily idle in order to avoid emissions.
50. Recyclable material and waste shall be removed from the site, in accordance with all federal, provincial and municipal regulations, to disposal facilities licensed to receive them.
51. Waste generated will be disposed according to regulation (i.e., O. Reg. 102/94 and O. Reg. 558/00, R.R.O. 1990, 347).
52. On a daily basis, an inspection or “sweep” of the work area shall be performed prior to commencement of project works and activities to ensure wildlife are not present in the work area (include in site checklist).
53. Field information regarding incidental encounters with wildlife (non-SAR wildlife) shall be compiled and reported.
54. For incidental wildlife encounters, the following information should be recorded in the field:
 - Locations, dates and time of day where the species were encountered;
 - Names of species encountered;
 - Photographs of the species, if taken;
 - Condition of animal.
55. If injured/dead wildlife are encountered report to PCA immediately. PCA may require retrieval and storage on ice of carcass for laboratory testing.
56. Work areas will be kept clean and free of potential hazards to wildlife such as wire, cable, tubing, plastic, antifreeze or other materials that wildlife may eat or become entangled in.
57. Waste will be stored, handled, and transported in accordance with the Waste Management Plan, including storage of all solid waste in sealed, bear-proof containers.
58. Feeding of wildlife is prohibited.
59. Adhere to local noise by-laws. Notify residents of planned activities that may cause disturbance and schedule them to avoid sensitive time periods.
60. Monitor and mitigate public complaints by keeping a record of complaints and addressing any issues raised by the public.
61. Machines shall not be left to unnecessarily idle in order to avoid emissions.

